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     (FILE 'HOME' ENTERED AT 14:19:23 ON 13 FEB 2004)

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,
     BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA,
     CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DISSABS,
     DDFB, DDFU, DGENE, DRUGB, DRUGMONOG2, ...' ENTERED AT 14:19:31 ON 13 FEB
     2004
               SEA DELTA-6-DESATURASE OR SPHINGOLIPID DESATURASE
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                1   FILE ADISCTI
                1   FILE ADISNEWS
               74   FILE AGRICOLA
                3   FILE ANABSTR
               13   FILE AQUASCI
               14   FILE BIOBUSINESS
                2   FILE BIOCOMMERCE
              495   FILE BIOSIS
               24   FILE BIOTECHABS
               24   FILE BIOTECHDS
               64   FILE BIOTECHNO
              227   FILE CABA
               30   FILE CANCERLIT
              664   FILE CAPLUS
               12   FILE CEABA-VTB
                1   FILE CIN
                4   FILE CONFSCI
                1   FILE CROPU
               14   FILE DISSABS
               21   FILE DDFU
              345   FILE DGENE
               27   FILE DRUGU
                4   FILE EMBAL
              342   FILE EMBASE
              142   FILE ESBIOBASE
                4   FILE FEDRIP
               42   FILE FROSTI
               30   FILE FSTA
              199   FILE GENBANK
               32   FILE IFIPAT
               31   FILE JICST-EPLUS
                3   FILE KOSMET
               47   FILE LIFESCI
              310   FILE MEDLINE
                1   FILE NIOSHTIC
                4   FILE OCEAN
              102   FILE PASCAL
                2   FILE PHIN
                3   FILE PROMT
              345   FILE SCISEARCH
              106   FILE TOXCENTER
              164   FILE USPATFULL
                7   FILE USPAT2
                3   FILE VETU
               34   FILE WPIDS
               34   FILE WPINDEX
L1              QUE DELTA-6-DESATURASE OR SPHINGOLIPID DESATURASE
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     FILE 'CAPLUS, BIOSIS, SCISEARCH, EMBASE, MEDLINE, CABA, ESBIOBASE,
     TOXCENTER, PASCAL, AGRICOLA' ENTERED AT 14:21:40 ON 13 FEB 2004
L2          101 S L1 AND (CORN OR PENTANDRA OR SOPYBEAN)
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L3              42 S L2 AND (ISOLAT? OR PURIF? OR CHARACT?)
L4              16 DUP REM L3 (26 DUPLICATES REMOVED)

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=> d l4 ibib ab 1-16

L4 ANSWER 1 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:256440 CAPLUS
DOCUMENT NUMBER: 136:291012
TITLE: Cloning and sequences of fatty acid desaturases Fad4, Fad5, Fad5-2, and Fad6 from Thraustochytrium and Pythium irregulare and their use for production of polyunsaturated fatty acids
INVENTOR(S): Qiu, Xiao; Hong, Haiping
PATENT ASSIGNEE(S): Bioriginal Food & Science Corporation, Can.
SOURCE: PCT Int. Appl., 98 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002026946	A2	20020404	WO 2001-IB2346	20010928
WO 2002026946	A3	20030508		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002018447	A5	20020408	AU 2002-18447	20010928
US 2002156254	A1	20021024	US 2001-967477	20010928
EP 1322752	A2	20030702	EP 2001-985723	20010928
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
NO 2003001405	A	20030515	NO 2003-1405	20030327

PRIORITY APPLN. INFO.:
US 2000-236303P P 20000928
US 2001-297562P P 20010612
WO 2001-IB2346 W 20010928

AB The invention provides **isolated** nucleic acid mols. which encode novel fatty acid desaturase family members. The cDNA sequences and the encoded amino acid sequences of Fad4 (Δ4 desaturase), Fad5 and Fad5-2 (Δ5 desaturase) and Fad6 (. **DELTA.6 desaturase**) from fungi Thraustochytrium and Pythium irregulare are disclosed. The Fad4, Fad5, Fad5-2, and Fad6 are involved in the biosynthesis of long chain polyunsatd. fatty acids DHA (docosahexaenoic acid), DPA (docosapentaenoic acid), GLA (γ-linolenic acid), SDA (stearidonic acid), EPA (eicosapentaenoic acid), and AA (arachidonic acid). The invention also provides recombinant expression vectors containing desaturase nucleic acid mols., host cells into which the expression vectors have been introduced, and methods for large-scale production of long chain polyunsatd. fatty acids, e.g., DHA. The long chain polyunsatd. fatty acids may be used as a dietary supplement or for treatment of diseases.

L4 ANSWER 2 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:182219 CAPLUS
DOCUMENT NUMBER: 136:242927
TITLE: Cloning of .**DELTA.6**-**desaturase** gene from evening primrose and its use in γ linolenic acid (GLA) production in transgenic plants

INVENTOR(S): Thomas, Terry L.
PATENT ASSIGNEE(S): Rhone-Poulenc Agrochimie, Fr.
SOURCE: U.S., 53 pp., Cont.-in-part of U.S. 5,789,220.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6355861	B1	20020312	US 1997-934254	19970919
ZA 9207777	A	19930421	ZA 1992-7777	19921009
US 5552306	A	19960903	US 1994-307382	19940914
US 5789220	A	19980804	US 1997-789936	19970128
US 6683232	B1	20040127	US 2000-685775	20001010
US 2002108147	A1	20020808	US 2001-29756	20011221

PRIORITY APPLN. INFO.: US 1991-774475 B2 19911010
US 1992-817919 B2 19920108
US 1992-959952 B1 19921013
US 1994-307382 A2 19940914
US 1997-789936 A2 19970128
US 1994-366779 A1 19941230
US 1997-934254 A3 19970919

AB Linoleic acid is converted into γ-linolenic acid by the enzyme . **DELTA.6-desaturase**. The present invention is directed to **isolated** nucleic acids comprising the .**DELTA** .**6-desaturase** gene from evening primrose. More particularly, the **isolated** nucleic acid comprises the promoter, coding region and termination regions of the .**DELTA**.**6-desaturase** gene. The present invention provides recombinant vectors expressing .**DELTA**.**6-desaturase** gene controlled by heterologous regulatory promoter and terminator elements. The nucleic acids and recombinant constructions of the instant invention are useful in the production of GLA in transgenic organisms.

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:814628 CAPLUS
DOCUMENT NUMBER: 133:359818
TITLE: Arabidopsis KNAT411 gene promoter and its use for seed-specific gene expression in transgenic plants
INVENTOR(S): Terry, L. Thomas; Hsieh, Tzung-fu
PATENT ASSIGNEE(S): Rhobio, Fr.
SOURCE: PCT Int. Appl., 71 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000068388	A1	20001116	WO 2000-EP4879	20000505

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6342657 B1 20020129 US 1999-306060 19990506
EP 1177300 A1 20020206 EP 2000-931269 20000505
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
PRIORITY APPLN. INFO.: US 1999-306060 A 19990506
WO 2000-EP4879 W 20000505

AB The present invention is directed to **isolated** promoter sequences from seed-specific genes, such as KNAT411 . When operably linked to either the coding sequence of a heterologous gene or a sequence complementary to a native plant gene, the subject promoters direct expression of the coding sequence or complementary sequence in a plant seed, including the early embryo. The promoter sequences are useful in expression cassettes and expression vectors for the transformation of plants. Also provided are methods of directing seed-specific expression of a gene or sequence complementary to a native plant gene by introducing into a plant cell an **isolated** nucleic acid comprising a subject promoter operably linked to said gene or complementary sequence. Methods for activating a site-specific recombination system in the early embryo of a seed by transforming a plant with an expression cassette comprising a subject promoter operably linked to a recombinase gene are also provided. Thus, the A. thaliana KNAT411 gene promoter was cloned and sequenced. This gene was found to be active very early in embryogenesis, much earlier than other known seed-specific promoters. Southern anal. indicated that there was only one KNAT411 gene, but there were several KNAT411-like sequences in the A. thaliana genome. The KNAT411 gene was determined to have five exons separated by four introns. The observed position of the third intron (inside the ELK domain) and of the fourth intron (interrupting the homeodomain) is **characteristic** of knotted genes.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:384440 CAPLUS
DOCUMENT NUMBER: 133:28047
TITLE: Polynucleotides (cDNA) and polypeptides of Picramnia **pentandra .delta.-6 desaturase** and plant **sphingolipid desaturase** homologs, sequences and biological uses thereof
INVENTOR(S): Cahoon, Edgar B.; Cahoon, Rebecca E.; Hitz, William D.; Kinney, Anthony J.
PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA
SOURCE: PCT Int. Appl., 57 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000032790	A2	20000608	WO 1999-US28589	19991202
WO 2000032790	A3	20001116		

W: AE, AL, AU, BA, BB, BG, BR, CA, CN, CR, CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1998-110784P P 19981203

AB The invention provides cDNA mols. encoding Picramnia **pentandra** (Florida bitterbush) **.delta.-6 desaturase**,

and cDNA mols. encoding **corn**, soybean, and wheat proteins similar to **sphingolipid desaturases**, based on sequence homol. The invention also provides a chimeric gene comprising the P. **pentandra .delta.-6 desaturase** cDNA, or the **corn**, soybean or wheat **sphingolipid desaturase** sequence homolog cDNA operably linked to suitable regulatory sequences (such as promoter and terminator sequences), and a host cell (such as yeast, bacteria, plant or virus) transformed with said chimeric gene for the recombinant production of the desaturases. The invention further provides a method for selecting cells transformed with said chimeric gene, which involves growing cells under conditions which allow for expression of the gene in an amount which alters the concentration of fatty acids with δ-6 double bonds. Finally, the invention provides for the use of: (1) plant **.delta.-6 desaturase** - or **sphingolipid desaturase**-specific primers for amplification of a nucleic acid encoding **.delta.-6 desaturase** or **sphingolipid desaturase**; (2) plant **.delta.-6 desaturase**- or **sphingolipid desaturase**-specific probes in screening a cDNA or genomic library for nucleic acid mols. encoding said desaturases and (3) polynucleotides comprising at least 30 nucleotides of the **.delta.-6 desaturase** or **sphingolipid desaturase** cDNA mol. or complement of such sequence in identifying an polynucleotide that affects the level of desaturase expression. The cDNA sequence, as well as the corresponding amino acid sequence of P. **pentandra .delta.-6 desaturase** are provided. In addition, cDNA and amino acid sequences of full length and partial cDNA clones encoding **corn**, wheat and soybean **sphingolipid desaturase** sequence homologs are provided. Using the BLASTX algorithm, the amino acid sequence of the P. **pentandra .delta.-6 desaturase** was found to be similar to the amino acid sequences of GenBank accession number U79010 GI 2062403, while the amino acid sequences of **corn**, soybean and wheat **sphingolipid desaturase** sequence homologs were similar to amino acid sequences of GenBank accession nos. AF031194 GI 4104056, X87143 GI 1040729 and U79010 GI 2062403. The invention reported that while the amino acid sequences of the **corn**, soybean and wheat proteins were similar to **.delta.-6 desaturase** sequences, the sequences provided by the invention are **sphingolipid desaturase** homologs since these plants do not produce δ-6 double bonds. The invention specifically discussed the methods used in producing transgenic soybean embryos able to express the P. **pentandra** (Florida bitterbush) **.delta.-6 desaturase**, and **characterized** the alterations in the fatty acid compns found in these embryos. The invention also discussed the potential use of the cDNA mols. claimed here in production of novel fatty acids in seed oils of transgenic plants.

L4 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 1999:38200 CAPLUS
DOCUMENT NUMBER: 130:235121
TITLE: Cloning, expression, and nutritional regulation of the mammalian **.DELTA.-6 desaturase**
AUTHOR(S): Cho, Hyekyung P.; Nakamura, Manabu T.; Clarke, Steven D.
CORPORATE SOURCE: Program of Nutritional Sciences and the Institute for Cellular and Molecular Biology, The University of Texas-Austin, Austin, TX, 78712, USA
SOURCE: Journal of Biological Chemistry (1999), 274(1), 471-477
CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER: American Society for Biochemistry and Molecular Biology

DOCUMENT TYPE: Journal
LANGUAGE: English

AB Arachidonic acid (20:4(n-6)) and docosahexaenoic acid (22:6(n-3)) have a variety of physiol. functions that include being the major component of membrane phospholipid in brain and retina, substrates for eicosanoid production, and regulators of nuclear transcription factors. The rate-limiting step in the production of 20:4(n-6) and 22:6(n-3) is the desatn. of 18:2(n-6) and 18:3(n-3) by **.DELTA.-6 desaturase**. The authors describe the cloning, **characterization**, and expression of a mammalian **.DELTA.-6 desaturase**. The open reading frames for mouse and human **.DELTA.-6 desaturase** each encode a 444-amino acid peptide, and the two peptides share an 87% amino acid homol. The amino acid sequence predicts that the peptide contains two membrane-spanning domains as well as a cytochrome b5-like domain that is **characteristic** of nonmammalian **.DELTA.-6 desaturases**. Expression of the open reading frame in rat hepatocytes and Chinese hamster ovary cells instilled in these cells the ability to convert 18:2(n-6) and 18:3(n-3) to their resp. products, 18:3(n-6) and 18:4(n-3). When mice were fed a diet containing 10% fat, hepatic enzymic activity and mRNA abundance for hepatic **.DELTA.-6 desaturase** in mice fed **corn** oil were 70 and 50% lower than in mice fed triolein. Finally, Northern anal. revealed that the brain contained an amount of **.DELTA.-6 desaturase** mRNA that was several times greater than that found in other tissues including the liver, lung, heart, and skeletal muscle. The RNA abundance data indicate that prior conclusions regarding the low level of **.DELTA.-6 desaturase** expression in nonhepatic tissues may need to be reevaluated.

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:682549 CAPLUS
DOCUMENT NUMBER: 129:311742
TITLE: The 5'-regulatory region of an Arabidopsis oleosin gene and seed-specific expression of genes for enzymes of lipid metabolism from it
INVENTOR(S): Thomas, Terry L.; Li, Zhongsen
PATENT ASSIGNEE(S): Rhone-Poulenc Agro, Fr.
SOURCE: PCT Int. Appl., 103 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9845461	A1	19981015	WO 1998-US7179	19980409
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5977436	A	19991102	US 1997-831575	19970409
AU 9871071	A1	19981030	AU 1998-71071	19980409
AU 739442	B2	20011011		
ZA 9803047	A	19990305	ZA 1998-3047	19980409
EP 973920	A1	20000126	EP 1998-918081	19980409
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				

BR 9807969	A	20000308	BR 1998-7969		19980409
JP 2001519668	T2	20011023	JP 1998-543141		19980409
PRIORITY APPLN. INFO.:			US 1997-831575	A	19970409
			WO 1998-US7179	W	19980409

AB The 5'-regulatory region of an Arabidopsis thaliana oleosin gene is cloned and **characterized** for use in the seed-specific expression of foreign genes, specifically genes for enzymes of lipid metabolism to alter the seed lipid composition A cDNA for the seed **.DELTA.6 desaturase** of borage seed was cloned by gene discovery methods with identity of the cDNA confirmed by expression in tobacco. A cDNA for an A. thaliana oleosin was cloned by differential screening of a seed cDNA library. Expression of the oleosin gene was limited to developing and imbibing seed. The gene was cloned using the cDNA as a probe and the promoter region identified by looking for promoter-specific sequence motifs. Expression of a reporter gene from the oleosin promoter region was limited to green seed and node regions where siliques, cauline leaves, and branches join the inflorescence stem. Some activity was also found in developing seedlings but this was shown to be carry over from dry seed. The induction ratio of the promoter in seed was approx. 210 (highest activity vs. lowest during seed development) and this peak activity was approx. 100-fold greater than that of the cauliflower mosaic virus 35S promoter. Expression of the **.DELTA.6 desaturase** gene from the oleosin promoter increased the Arabidopsis γ-linolenic acid content to 3.1% of seed C18 fatty acids and increased the content of octadecatetradecaenoic acid to 1.1%.

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:682548 CAPLUS
DOCUMENT NUMBER: 129:311741
TITLE: A sunflower 2 S albumin 5'-regulatory region and its use in modification of plant seed lipid composition
INVENTOR(S): Thomas, Terry L.; Beremand, Phillip D.; Nunberg, Andrew N.
PATENT ASSIGNEE(S): Rhone-Poulenc Agro, Fr.
SOURCE: PCT Int. Appl., 68 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 9845460	A1	19981015	WO 1998-US7178		19980409
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG					
US 5959175	A	19990928	US 1997-831570		19970409
AU 9869634	A1	19981030	AU 1998-69634		19980409
ZA 9803039	A	19990305	ZA 1998-3039		19980409
BR 9807966	A	20000308	BR 1998-7966		19980409
EP 1007710	A1	20000614	EP 1998-915454		19980409
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI					
JP 2001518795	T2	20011016	JP 1998-543140		19980409
PRIORITY APPLN. INFO.:			US 1997-831570	A	19970409
			WO 1998-US7178	W	19980409

AB The 5' regulatory regions of a sunflower 2 S albumin gene is

characterized for use in high-level, seed-specific expression of foreign genes in plants. In particular, the region may be used to drive sense or antisense expression of genes involved in fatty acid synthesis or lipid metabolism to alter the lipid composition of seed. A cDNA for the . **DELTA.6 desaturase** of borage was cloned by screening a bank of abundant seed polysomal RNAs against public sequence databases. A cDNA encoding motifs typical of membrane-bound desaturases was identified and the identity of the gene product was confirmed by expression. A cDNA for the albumin was cloned by differential screening of sunflower seed banks and a partial cDNA used as a probe to identify the gene. Expression of the .**DELTA.6 desaturase** gene from the sunflower promoter in Arabidopsis resulted in the accumulation of γ-linolenic acid and octdecatetraenoic acid in seed at 4.4. and 1.7% of seed C18 fatty acids resp. Expression was sharply limited to seed with neither of these acids detectable in leaf when the gene was expressed from this promoter. Expression of the desaturase cDNA from a 35S promoter led to significant accumulation of γ-linolenic acid in leaves.

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:231335 CAPLUS
DOCUMENT NUMBER: 126:289996
TITLE: Microbial and plant genes for .**DELTA.6-desaturases** and their use in increasing tissue levels of γ-linolenic acid
INVENTOR(S): Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; Freyssinet, Georges L.
PATENT ASSIGNEE(S): Rhone-Poulenc Agrochimie, Fr.
SOURCE: U.S., 30 pp., Cont.-in-part of U.S. 5,552,306.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5614393	A	19970325	US 1994-366779	19941230
ZA 9207777	A	19930421	ZA 1992-7777	19921009
US 5552306	A	19960903	US 1994-307382	19940914
US 5663068	A	19970902	US 1995-478727	19950607
US 5689050	A	19971118	US 1995-473508	19950607
CA 2207906	AA	19960711	CA 1995-2207906	19951228
WO 9621022	A2	19960711	WO 1995-IB1167	19951228
WO 9621022	A3	19960912		
W: AU, BR, CA, CN, JP, RO, RU, UA				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9646735	A1	19960724	AU 1996-46735	19951228
AU 707061	B2	19990701		
EP 801680	A2	19971022	EP 1995-944464	19951228
R: DE, ES, FR, GB, GR, IT				
CN 1177379	A	19980325	CN 1995-197728	19951228
CN 1117864	B	20030813		
BR 9510411	A	19980519	BR 1995-10411	19951228
JP 10511848	T2	19981117	JP 1995-520827	19951228
RU 2181772	C2	20020427	RU 1997-112919	19951228
US 5789220	A	19980804	US 1997-789936	19970128

PRIORITY APPLN. INFO.:
US 1991-774475 B2 19911010
US 1992-817919 B2 19920108
US 1992-959952 B1 19921013
US 1994-307382 A2 19940914
US 1994-366779 A 19941230

WO 1995-IB1167 W 19951228

AB Microbial genes for .**DELTA.6-desaturases** are cloned and **characterized** for use in the preparation of transgenic organisms synthesizing high levels of γ-linolenic acid from linoleic acid. Plants expressing a desaturase gene and with high tissue levels of γ-linolenic acid are chilling resistant. These plants can also be used to produce oils with altered levels γ-linolenic acid. The Synechocystis .**DELTA.6-desaturase** was cloned by expression in a γ-linolenate-deficient Anabaena. Expression of the gene in transgenic tobacco and carrot is demonstrated.

L4 ANSWER 9 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 1997:665075 CAPLUS
DOCUMENT NUMBER: 127:358326
TITLE: Fish oil inhibits .**DELTA.6 desaturase** activity in vivo: utility in a dietary paradigm to obtain mice depleted of arachidonic acid
AUTHOR(S): Raz, Amiram; Kamin-Belsky, Nurit; Przedecki, Fiorenza; Obukowicz, Mark G.
CORPORATE SOURCE: Dep. Biochem., Tel Aviv Univ., Tel Aviv-Jaffa, 69978, Israel
SOURCE: Journal of Nutritional Biochemistry (1997), 8(10), 558-565
CODEN: JNBIEL; ISSN: 0955-2863
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In mice that were alternately fasted and then refed an essential fatty acid-deficient (EFAD) diet, there was a rapid and substantial decline in tissue n-3 and n-6 polyunsatd. fatty acids (PUFAs) and a corresponding increase in n-9 fatty acids. Combined in vivo activities of Δ6 + Δ5 desaturases were quantified directly by measuring the conversion of 14C-linoleic acid (i.p. injection) to 14C-arachidonic acid in liver lipids. Δ5 Desaturase activity was quantified by measuring the conversion of 14C-dihomo-γ-linolenic acid (i.p. injection) to 14C-arachidonic acid in liver lipids. The combined Δ6 + Δ5 desaturase activities in EFAD mice was very similar to that in chow-fed control mice (35% vs. 33% conversion of 14C-linoleic acid to 14C-arachidonic acid, resp.). Subsequent refeeding of EFAD mice with an EFAD diet supplemented with **corn** oil restored tissue n-6 PUFA levels, but did not alter Δ6 + Δ5 desaturase activities (33%). In contrast, subsequent refeeding of EFAD mice with a fish oil-supplemented diet markedly inhibited Δ6 + Δ5 desaturase activities (7%). Fatty acid anal. of the livers from the fish oil-fed mice showed that there was a depletion of the n=6 PUFAs, linoleic acid, and arachidonic acid, and an increase in the n-3 PUFAs, eicosapentaenoic acid (20:5 n-3) and docosahexaenoic acid (22:6 n-3). The inhibition of Δ6 + Δ5 desaturase activities was also maintained in EFAD mice fed a 1:1 mixture of fish oil:**corn** oil. As a consequence, a unique fatty acid composition in liver and plasma was obtained in which arachidonic acid was selectively depleted, whereas linoleic acid and n-3 PUFAs were increased. Δ5 Desaturase activity was not affected by any of the fasting/refeeding paradigms. The data demonstrate that dietary n-3 PUFAs neg. regulate the in vivo synthesis of n-6 PUFAs at the level of the .**DELTA.6 desaturase**. The inhibition of .**DELTA.6 desaturase** activity by n-3 PUFAs provides a basis for a unique dietary route to selectively reduce tissue arachidonic acid, while providing sufficient linoleic acid, an essential fatty acid, to support normal cellular metabolism This dietary paradigm may be effective in attenuating diseases **characterized** by excessive production of arachidonic acid-derived eicosanoids.

L4 ANSWER 10 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1996:531817 CAPLUS
DOCUMENT NUMBER: 125:160370
TITLE: Borago officinalis .**DELTA**.6-**desaturase** cDNA sequence, γ-linolenic acid production by transgenic plant, and improved resistance to chilling
INVENTOR(S): Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; Nunberg, Andrew N.; Freyssinet, Georges L.
PATENT ASSIGNEE(S): Rhone-Poulenc Agrochimie, Fr.
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9621022	A2	19960711	WO 1995-IB1167	19951228
WO 9621022	A3	19960912		
W: AU, BR, CA, CN, JP, RO, RU, UA				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5614393	A	19970325	US 1994-366779	19941230
AU 9646735	A1	19960724	AU 1996-46735	19951228
AU 707061	B2	19990701		
EP 801680	A2	19971022	EP 1995-944464	19951228
R: DE, ES, FR, GB, GR, IT				
BR 9510411	A	19980519	BR 1995-10411	19951228
JP 10511848	T2	19981117	JP 1995-520827	19951228
RU 2181772	C2	20020427	RU 1997-112919	19951228

PRIORITY APPLN. INFO.:
US 1994-366779 A 19941230
US 1991-774475 B2 19911010
US 1992-817919 B2 19920108
US 1992-959952 B1 19921013
US 1994-307382 A2 19940914
WO 1995-IB1167 W 19951228

AB Linoleic acid is converted into γ-linolenic acid (GLA) by the enzyme .**DELTA**.6-**desaturase**. The present invention is directed to **isolated** nucleic acids comprising the .**DELTA**.6-**desaturase** gene. More particularly, the **isolated** nucleic acid comprises the promoter, coding region and termination regions of the .**DELTA**.6-**desaturase** gene. The present invention provides recombinant constructions comprising the .**DELTA**.6-**desaturase** coding region in functional combination with heterologous regulatory sequences. The nucleic acids and recombinant constructions of the instant invention are useful in the production of GLA in transgenic organisms.

L4 ANSWER 11 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:450000 CAPLUS
DOCUMENT NUMBER: 125:141383
TITLE: Effects of dietary lipids on the fatty acid composition of triglycerides and phospholipids in tissues of white sturgeon
AUTHOR(S): Xu, R.; Hung, S. S. O.; German, J. B.
CORPORATE SOURCE: Department Animal Science, University California, Davis, CA, USA
SOURCE: Aquaculture Nutrition (1996), 2(2), 101-109
CODEN: AQNUF6; ISSN: 1353-5773
PUBLISHER: Blackwell
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Eight **purified** diets were fed to juvenile white sturgeon,

Acipenser transmontanus Rick, for 9 wk to investigate the effect of dietary lipids on the fatty acid composition of phospholipids and triglycerides from muscle, liver and brain. The diets contained 150 g/kg of oils from canola, **corn**, cod liver, lard, linseed, soybean, safflower, or a control mixture (**corn** oil/cod liver oil/lard, 1:1:1, by wt). Dietary lipids significantly ($P \leq 05$) affected the composition of tissue triglycerides and phospholipids. Tissue triglyceride fatty acid composition ranged widely, in parallel with the dietary lipids, while phospholipids changes were more conservative. Brain phospholipid fatty acid composition was less responsive to diet compared with that in muscle and liver. Considerable amts. of n-6 and n-3 long chain polyunsatd. fatty acids (> C20) were found in triglycerides and phospholipids with all diets, demonstrating that white sturgeon can desaturate and elongate linoleic acid (18:2n-6) and linolenic acid (18:3n-3). Further, the products of the **.DELTA.6 desaturase**, i.e. 18:3 n-6 and 18:4n-3, were relatively abundant in triglyceride, suggesting that the . **DELTA.6 desaturase** might not be a limiting step in the process in white sturgeon. Nevertheless, accumulation of both EPA and DHA was greater in the sturgeon fed fish oil than those fed linseed oil, indicating that muscle triglyceride EPA and DHA levels are best enhanced by diets rich in preformed EPA and DHA.

L4 ANSWER 12 OF 16 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
DUPLICATE 3

ACCESSION NUMBER: 1993:390354 BIOSIS
DOCUMENT NUMBER: PREV199396065654
TITLE: Dietary fatty acid modulation of events associated with mouse skin tumor promotion.
AUTHOR(S): Belury, Martha A. [Reprint author]; Lee, Wha-Young [Reprint author]; Lo, Herng-Hsiang; Locniskar, Mary F. [Reprint author]; Fischer, Susan M.
CORPORATE SOURCE: Univ. Texas, Austin, TX 78712, USA
SOURCE: Nutrition and Cancer, (1993) Vol. 19, No. 3, pp. 307-319. CODEN: NUCADQ. ISSN: 0163-5581.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 23 Aug 1993
Last Updated on STN: 3 Jan 1995

AB Increasing levels of dietary **corn** oil have been correlated with inhibition of 12-O-tetradecanoyl-phorbol-13-acetate-(TPA) promoted skin tumorigenesis in mice (Leyton et al. Cancer Res. 51, 907-915, 1991). This study was undertaken to assess the effects of dietary **corn** oil on several events associated with tumor promotion. Three semipurified diets containing 15% (wt/wt) total fat with increasing levels of linoleate (0.8%, 4.5%, and 8.4%) supplied by **corn** oil were fed to mice for at least four weeks. Although incorporation of linoleate into epidermal phosphatidylcholine increased with increasing amounts of dietary **corn** oil, the elongated desaturated product of linoleate, arachidonate, was similar or decreased slightly in mice fed the three diets. Minimal activity of **delta-6-desaturase**, the rate-limiting enzyme in the conversion of linoleate to arachidonic acid, was found in the epidermis compared with the liver, suggesting that linoleate is not converted to arachidonic acid in the skin. Subcellular distribution of protein kinase C was altered in mice fed 0.8% linoleate, where 69% of protein kinase C activity was in the cytosol compared with 78% and 74% for groups fed 4.5% and 8.4% linoleate, respectively. Activation of partially **purified** protein kinase C **isolated** from mouse epidermis by linoleate was significantly lower (p lt 0.01) than that **isolated** by arachidonic acid. TPA-induced vascular permeability was significantly greater (p lt 0.05), whereas hyperplasia 48 hours after TPA treatment was significantly lower, in mice fed the 8.4% linoleate diet. However, TPA induction of ornithine decarboxylase activity did not appear to be significantly modified by dietary linoleate. These data suggest that cellular processes associated

with carcinogenesis are affected by the level of dietary linoleate.

L4 ANSWER 13 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
ACCESSION NUMBER: 1989:406373 CAPLUS
DOCUMENT NUMBER: 111:6373
TITLE: Effects of dietary fish oil on human mammary carcinoma and lipid-metabolizing enzymes
AUTHOR(S): Borgeson, Charlotte E.; Pardini, Lani; Pardini, Ronald S.; Reitz, Ronald C.
CORPORATE SOURCE: Dep. Biochem., Univ. Nevada, Reno, NV, 89557, USA
SOURCE: Lipids (1989), 24(4), 290-5
CODEN: LPDSAP; ISSN: 0024-4201
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The growth rate of a human mammary carcinoma, MX-I, was significantly reduced in athymic nude mice fed fish-oil. Tumors from the fish oil-fed animals also showed a greater sensitivity to 2 anti-neoplastic agents, mitomycin C and doxorubicin. Mitochondria were **isolated** from control livers, host livers, and tumors from fish oil- and **corn** oil-fed animals, and increased levels of 20:5n-3 and 22:6n-3 were found in mitochondrial lipids in all 3 tissues from the fish oil-fed animals. To investigate the effect of dietary n-3 fatty acids on lipid metabolism, the activity of the acyl-CoA:carnitine acyltransferase and three acyl-CoA desaturases were measured. Carnitine acyltransferase activity toward all four acyl-CoA substrates tested was markedly increased in mitochondria from liver by feeding fish oil. In mitochondria from tumors, feeding fish oil resulted in an increased activity toward only 18:3n-3. These data suggest that fish oil may induce an increase in the oxidation of fatty acids. The Δ9-desaturase activity was decreased in microsomes from liver and tumors from fish oil-fed animals. However, both the Δ6 and Δ5 desaturases were increased in tumors and in control liver as a result of feeding fish oil. The .**DELTA**.6 **desaturase** was not altered in microsomes from the host animals. The effect of fish oil on the Δ5 and . **DELTA**.6 **desaturases** may involve alterations to metabolism of specific polyunsatd. fatty acids, especially in the tumor tissue.

L4 ANSWER 14 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 5
ACCESSION NUMBER: 1989:153217 CAPLUS
DOCUMENT NUMBER: 110:153217
TITLE: Effect of dietary n-3 polyunsaturated fatty acids on cholesterol synthesis and degradation in rats of different ages
AUTHOR(S): Choi, Yong Soon; Goto, Shoichiro; Ikeda, Ikuo; Sugano, Michihiro
CORPORATE SOURCE: Sch. Agric., Kyushu Univ., Fukuoka, 812, Japan
SOURCE: Lipids (1989), 24(1), 45-50
CODEN: LPDSAP; ISSN: 0024-4201
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Male Sprague-Dawley rats 4 wk or 8 mo of age were fed **purified** diets containing 10% fat, either as a blend of safflower oil and palm olein (polyunsatd. fatty acids, PUFA, 34%), a blend of linseed oil and palm olein (PUFA, 33%) or sardine oil (PUFA, 33%) for 4 wk. In other trials, sterol contents were made equivalent by supplementing cholesterol to a blend of **corn** oil and palm olein (PUFA, 30%) or phytosterol to sardine oil (PUFA, 30%). Fish oil was hypolipidemic in rats of different ages, but it tended to increase liver cholesterol in adult animals and this was not improved by the addition of phytosterol. The age-dependent increase in liver cholesterol was not duplicated in rats fed a vegetable fat blend supplemented with cholesterol. At both ages, liver 3-hydroxy-3-methylglutaryl CoA reductase activity was lower in the sardine oil than in the other groups. There were no age- or diet-related differences in the activity of liver cholesterol 7α-hydroxylase. Fecal steroid

excretion was comparable in age-matched rats fed diets supplemented either with cholesterol or phytosterol. Sardine oil reduced the .**DELTA** .**6-desaturase** activity markedly as compared with linseed oil, and age-dependent reduction of the desaturase activity was observed in all dietary groups examined Thus, there was a specific effect of fish oil on lipid metabolism

L4 ANSWER 15 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 6
ACCESSION NUMBER: 1984:190688 CAPLUS
DOCUMENT NUMBER: 100:190688
TITLE: Effect of dietary fats on desaturase activities and the biosynthesis of fatty acids in rat liver microsomes
AUTHOR(S): Mahfouz, M. M.; Smith, T. L.; Kummerow, F. A.
CORPORATE SOURCE: Burnsider Res. Lab., Univ. Illinois, Urbana, IL, 61801, USA
SOURCE: Lipids (1984), 19(3), 214-22
CODEN: LPDSAP; ISSN: 0024-4201
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Four groups of rats were fed diets containing 15% (by weight) high-oleic safflower oil (SFO, rich in cis-18:1 acids), a mixture of 80% partially hydrogenated soybean oil plus 20% **corn** oil (H + CO, rich in trans-18:1 acids), lard (L, rich in saturated fatty acids), and **corn** oil (CO, rich in 18:2ω6). Fatty acid composition of liver microsomes and activities of the Δ5, Δ6, and Δ9 desaturases were determined Microsomal Δ6 fatty acid desaturase [9082-66-0] activity and arachidonic acid [506-32-1] were lower in the H + CO group compared with SFO of L. No difference was found in the Δ5 or . **DELTA**. **6 desaturase** activity of CO and SFO groups. Thus, the oleic acid level of the SFO diet had no effect on the metabolism of 18:2ω6. Fluorescent polarization studies, using trans-parinaric acid as a probe, showed no differences between the phys. states of phospholipid vesicles made from lipids **isolated** from each group. Thus, the trans-18:1 acids in partially hydrogenated soybean oil have a more inhibitory effect than saturated acids on EFA metabolism, even in the presence of adequate amts. of essential fatty acid.

L4 ANSWER 16 OF 16 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 7
ACCESSION NUMBER: 1982:405123 CAPLUS
DOCUMENT NUMBER: 97:5123
TITLE: Perturbation of the metabolism of essential fatty acids by dietary partially hydrogenated vegetable oil
AUTHOR(S): Hill, Eldon G.; Johnson, Susan B.; Lawson, Larry D.; Mahfouz, M. M.; Holman, Ralph T.
CORPORATE SOURCE: Hormel Inst., Univ. Minnesota, Austin, TX, 55912, USA
SOURCE: Proceedings of the National Academy of Sciences of the United States of America (1982), 79(4), 953-7
CODEN: PNASA6; ISSN: 0027-8424
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Rats were fed **purified** diets containing partially hydrogenated soybean oil as source of isomers of octadecenoic acid [26764-26-1], hydrogenated coconut oil as source of saturated fatty acids, or a low level of **corn** oil as low-fat control. All diets contained 18% of the linoleate [60-33-3] requirement. Rat liver and heart phospholipids were analyzed by gas-liquid chromatog. for fatty acids, and liver microsomes were assayed for desaturase (acyl-CoA, H-donor: oxidoreductase, EC 1.14.99.5) [9014-34-0] activities. Products of desatn. reactions measured anal. provided more information than did the enzymic assays. Rats fed isomeric octadecenoic acids showed more severe essential fatty acid deficiency than did saturated fat and control groups. The suppression of linoleate metabolites was largely due to decreased Δ5 desaturase [51901-23-6]

and .**DELTA.6 desaturase** [9082-66-0]
activities. At several levels of linoleate, the deficiency was more severe at the higher level of isomeric octadecenoic acids. Increasing the intake of linoleate to 7.5% of calories did not suppress deposition of isomeric unsatd. acids in tissue lipids.

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